GUEST EDITORIAL

The "Human Smart Grid" A Look into the Window of Smart Grid Evolution

By John D. McDonald, GM-Global T&D Marketing, GE Energy (Atlanta, Georgia USA)

With every passing moment, technology evolves, events take place, and a new slice of history is made. We can easily look back at the history made yesterday to understand what has happened and why, but it's far more difficult to look into tomorrow's window to anticipate what will soon become history. Looking into the window of smart grid evolution, what developments can we expect to see on the road ahead?

Certainly, utilities will continue to develop and deploy newer and more advanced smart grid technologies over the next three to five years. And as they do, will the average consumer begin to see sweeping changes, such as significantly lower electricity prices, fewer and less frequent blackouts, and more efficient delivery of power to their homes and businesses? Or, will they simply see "business as usual" in the electrical industry?

Far from Business as Usual

Though smart grid evolution will be far from "business as usual" over the next several years, the biggest near-term impact will be on the electrical grid itself, as utilities both large and small further the expansion and implementation of advanced smart grid technologies. However, additional developments occurring in parallel with grid expansion, such as Demand Response programs, will have an effect on the average consumer, though these effects will probably be felt more in the mid-term rather than in the near-term.

Once these already proven technologies are in place, the onus on utilities will need to shift to gaining consumer understanding, and subsequently consumer acceptance, by establishing comprehensive, two-way educational and informational programs to move successfully forward with larger scale deployments and consumer-empowered Demand Response programs. When this occurs, it will signal the emergence of the "human smart grid."

Education, Acceptance – the Keys to Understanding

Consumer education and acceptance will be essential keys to unlocking the sweeping economic and societal benefits that a nationwide smart grid can deliver to an energy-hungry nation. With well thought-out and implemented education and communication programs, utilities can plant the seeds that will help consumers comprehend the actual workings of a smart grid, how it enables economic vitality and energy independence, and how it keeps more of their own money in their own bank accounts. And consumers will need to accept and embrace the concept that realizing the benefits of a smart grid is going to require an open, collaborative effort on their part—and that their participation is as much an integral part as any piece of "smart" technology.

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As utilities endeavor to educate customers, they'll discover that they will also be educating themselves; educating themselves about what their customers want, what their customers need, what their customers demand, and what the nation must ultimately achieve to obtain energy independence. Operating like a "human smart grid," two-way communication between utilities and consumers will in itself demonstrate the effectiveness of the two-way communication that is the hallmark of the electrical smart grid.

Using customer surveys, segmentation analysis, voluntary participation programs, informational notices enclosed with utility bills, and town-hall format educational sessions, utilities and consumers can learn from one another how to better formulate future deployment plans, more easily identify and focus on areas requiring improvement, and finely tune pilot plans already in place to facilitate larger, more effective smart grid deployment. All this, enabled by the simple concept of creating and sustaining a human communication network.

Linking Regulators to the Human Grid

While educative dialogue between utilities and consumers progresses, regulators at both the state and federal levels will need to become "linked in" to the discussion to ensure that the proper regulatory backing is put in place to move smart grid evolution in the right direction. Regulatory support, such as a move away from the need to sell more electricity to increase revenues, will be required to ensure that utilities are compensated for conservation programs that meet electrical demand while selling less electricity.

With economic stimulus funds becoming more abundant and more available in the coming year, legislators will also need to have their ears to the ground as they enact stimulus-backed smart grid policies that are conceived with an educated, holistic understanding of the energy needs not only of today's consumers and providers, but with the added focus of meeting the nation's energy needs of tomorrow.

Consumer Involvement – the Missing Link

As smart grid evolves over the next three to five years, consumers will probably not see sweeping economic differences in their everyday lives. But during that time, their voice can serve as a guide for utilities and regulators in steering smart grid to greater success, and perhaps even accelerate the timetable during the process. By getting involved in two-way educational programs, actively participating in available pilot programs, and embracing smart grid as the long-term solution to our nation's energy and economic challenges, consumers can serve as the vital missing link in the "human smart grid." The window of opportunity is open to make tomorrow's history… today.

About the Author

John D. McDonald, P.E., is General Manager, Marketing for GE Energy T&D. In his 36 years of experience in the electric utility industry, John has developed power application software for both Supervisory Control and Data Acquisition/Energy Management and SCADA/Distribution Management System applications, developed distribution automation and load management systems, managed SCADA/EMS and SCADA/DMS projects, and assisted Intelligent Electronic Device (IED) suppliers in the automation of their IEDs.

John received his BSEE and MSEE (Power Engineering) degrees from Purdue University, and an M.B.A. (Finance) degree from the University of California-Berkeley. John is a member of Eta Kappa Nu (Electrical Engineering Honorary) and Tau Beta Pi (Engineering Honorary), is a Fellow of IEEE, and was awarded the IEEE Millennium Medal in 2000, the IEEE PES Excellence in Power Distribution Engineering Award in 2002, the IEEE PES Substations Committee Distinguished Service Award in 2003 and the 2009 Outstanding Electrical and Computer Engineer Award from Purdue University. He is also a member of DOE's Smart Grid Electricity Advisory Committee (EAC), is a member of NEMA's Smart Grid Council, and is on the Board of Directors of the GridWise Alliance.